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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,001	07/06/2001	Alexander Ganin	15-XZ-5881	8764

23446 7590 08/12/2003

MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661

EXAMINER
CHURCH, CRAIG E

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 08/12/2003

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Serial Number: 09/682,001
Filing Date: 07/06/01
Appellant(s): Ganin

Paper No. 16

Joseph Butscher
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed July 15, 2003.

(1) Real Party In Interest.

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences.

Appellant's statement "Not applicable" ia understood to mean that there are no related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims.

While appellant presents a lengthy description of prosecution history, the ultimate conclusion in lines 3-8 of page 5 is correct.

(4) Status of Amendments After Final.

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention.

The summary of invention contained in the brief is correct.

(6) Issues.

The appellant's statement of the issues in the brief is correct.

(7) Grouping of claims.

Page 10 of Appellant's brief includes a statement that the claims stand or fall together.

(8) Claims appealed.

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of record.

5,734,694	Khutoryansky et al	3/31/98
5,717,732	Tam	2/10/98
5,412,702	Sata	5/02/95

(10) Grounds of Rejection.

The following ground(s) of rejection are applicable to the appealed claims.

Claims 1, 2, 5, 9 and 23 are rejected under 35 U.S.C. § 103 as being unpatentable over Khutoryansky et al (5734694). Lines 50 of column 4 to 38 of column 6 explain operation of the disclosed tomographic system which includes presetting parameters such as

sweep angle (travel distance)

fulcrum (focal plane) height

slice thickness

speed.

Switches 716 ◂/▸ specify left or right sweeping, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to operate them in sequence since the source scanning in either direction is limited. The Auto Tomo function provides for imaging multiple slices (lines 52-62 of column 5 and lines 19-22 of column 8).

Claims 6, 7 and 10-21 are rejected under 35 U.S.C. § 103 as

being unpatentable over Khutoryansky et al (5734694) in view of Tam (5717732) and Sata (5,412,702). Tam teaches a linear tomograph including x-ray source 10 and digital detector array 12. Khutoryansky does not detail the structure of his detector, and it would have been obvious to employ therefor any known detector such as the digital detector taught by Tam in order to provide real time display. Sata teaches an x-ray tomograph equipped with a display 40 for simultaneously showing multiple tomographic views, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to equip the Khutoryansky with such means to speed up medical diagnosis.

(11) Response to Argument.

Page 10 of Appellant's brief includes a statement that the claims stand or fall together, and this answer focusses on claim 1 which reads on Khutoryansky as follows with information in brackets taken from the patent:

1, A method for acquiring digital x-ray images comprising:

identifying scan parameters designating slices of interest from a patient anatomy [lines 39-62 of column 5 describe both manual and automatic setting of the fulcrum or pivot point which determines the locations of the slices to be imaged];

calculating scan ranges for each of said slices, said scan images corresponding to distances traveled by each of a detector and x-ray tube while said x-ray tube exposes said detector to radiation [lines 18-35 of column 5 describe determining the sweep angle (scan range) which controls slice thickness];

calculating first and second preparation positions for each of said x-ray tube and detector, said first and second preparation positions being located at opposite ends of said scan ranges and corresponding to a distance traveled by said x-ray tube and the detector, said x-ray tube not exposing said detector to x-rays

while moving through said preparation positions [lines 53-57 of column 3 describe the points (prep positions) during a sweep where x-ray exposure begins and ends, and lines 28-31 of column 6 explain that the HOME switch moves the source/detector to their locations at the beginning of a scan (prep position) which may be at the head end of the table (as an example but which may be at the foot end as well)];

moving said detector and x-ray tube to said first detector and x-ray tube preparation positions, respectively [lines 28-31 of column 6 explain that the HOME switch moves the source/detector to their locations at the beginning of a scan (prep position) which may be at the head end of the table (as an example but may be at the foot end as well)];

acquiring a first x-ray image with said detector while moving said detector in a first direction over a first detector scan range and moving said x-ray tube in a second direction over a first tube scan range, said second direction differing from said first direction, said first x-ray image being acquired based on said scan parameters {this is the purpose of the device as discussed in lines 19 et seq of column 3 particularly with respect to figure 3};

moving said detector and x-ray tube to said second detector and x-ray tube preparation positions, respectively [lines 28-31 of column 6 explain that the HOME switch moves the source/detector to their locations at the beginning of a scan (prep position) which may be at the head end of the table (as an example but may be at the foot end as well)];

positioning said detector and x-ray tube at said second detector and x-ray tube preparation positions, respectively, after said acquiring a first x-ray image step {this appears to be an inadvertent repeat of the previous step}; and

acquiring a second x-ray image with said detector while moving said detector in said second direction over a second detector scan range and moving said x-ray tube in said first direction over a second tube scan range, said second x-ray image being acquired based on said scan parameters {since the system can be set up to automatically scan multiple slices through the AUTO TOMO function (lines 19-22 of column 8), a second image would be acquired}.

Lines 18 of column 7 to line 11 of column 8 present an overview of the imaging method.

Appellant presents three arguments traversing the rejection of claim 1.

A

Although the preamble of claim 1 refers to "a method for acquiring digital x-ray images", claim 1 recites no method steps or other features that limit the claim to digital imaging. Furthermore, the section of column 1 of Khutoryansky referred to by appellant that mentions film is a discussion of prior art devices and not of patentee's invention. The citation in column 3 noted by appellant says nothing about film as argued, but rather relates only to the bucky, which is short for bucky grid (an antiscatter device commonly used with both film and solid state array sensors). Nowhere in the patent is the Khutoryansky tomography method limited to film as represented by appellant.

C

Contrary to appellant's assertions that Khutoryansky does not provide for acquiring multiple slice images, this is precisely the function of the AUTO tomographic mode described in lines 19-22 of column 8 and lines 52-62 of column 5. In this mode the system automatically images the number of slices prescribed by the operator at predetermined focal plane increments:

> When tomographic mode is selected (TOMO ON), the fulcrum height is incremented after each exposure in predetermined steps for the number of steps selected for the procedure.

This is an explicit teaching that multiple slice images are to be obtained based on fulcrum positions stored in memory and on the number of slices input by the operator.

B

Although appellant observes that Khutoryansky moves his source/detector assembly to the center position after a scan, this has no bearing whatever on patentability of the claims since they do not recite where the source/detector are placed *after* a scan, ie a storage position, but only that at the *beginning* of a scan they are moved to the prep position, defined by applicant on page 3 of the specification simply as the opposite ends of the scan range and referred to by Khutoryansky as the HOME position. Nowhere does Khutoryansky state that his scans begin at the center of the scan range as is absurdly implied by appellant.

Appellant's assertion that Khutoryansky's HOME position is always at the head end of the table is a misrepresentation of the patent teaching as reference to "head end" is merely an example. Lines 28-31 of column 6 read:

> HOME 803 - moves the tubecrane to the HOME (head end, *for example*) position and positions the x-ray tube and bucky for the beginning of a linear tomographic sweep

That Khutoryansky provides several different sweep angles (table in column 5) is unequivocal evidence that there are many different HOME (or prep) positions, ie one for each end of each sweep range.

Similarly, lines 63 of column 5 to 11 of column 6 explicitly reveal that switch ◂ commands longitudinal sweeps to the LEFT, and switch ▸ commands longitudinal sweeps to the RIGHT in spite of appellant's insistence that the patent teaches no such functions. Further, there is no evidence in the patent that switches ◂/▸ are not employed for setting tomographic parameters. Similarly

switches ↩/↪ are utilized to set direction of angulation of the tubehead during tomography.

When acquiring a series of medical images it is essential to perform the imaging as quickly as possible because movement of the patient or movement of organs within the patient during the procedure could result in faulty images and erroneous diagnosis. For this reason, it is common practice to minimize scan time by scanning a patient alternately beginning at opposite ends of the table (ie the end of one scan is the beginning of the next scan). To always start a scan from the head end of the table as appellant argues Khutoryansky does would take twice as much time and would likely yield misleading images.

It is therefor felt that the final rejection is proper.

Craig E Church

CRAIG E. CHURCH
Senior Examiner
ART UNIT 2882

conferees

Ed Glick AU 2882

Olik Chaudhuri AU 2823 OC